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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/802,669

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Wai-Hon Lee

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09/15/2005

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EXAMINER

LIVEDALEN, BRIAN J

ART UNIT

PAPER NUMBER

2878

DATE MAILED: 09/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/802,669

**Applicant(s)**

LEE, WAI-HON

**Examiner**

Brian J. Livedalen

**Art Unit**

2878

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>7/29/2005</u> . | 6) <input type="checkbox"/> Other: ____.  |

**DETAILED ACTION*****Drawings***

The drawings are objected to because figures 3 and 4, which are embodiments of the present invention are labeled "Prior Art". Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Specification***

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Art Unit: 2878

### ***Claim Objections***

It appears that Applicant intended for claims 11 and 12 to be dependent from claim 10. For examination purposes, claims 11 and 12 will assumed to be dependent from claim 10 but further clarification is required.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Huber et al. (5424833).

In regard to claims 1-9, Huber discloses (fig. 1) a primary grating (4); a light source (2) disposed opposing a predetermined side of the primary reflective grating; a first reference grating (3) disposed between the light source and the primary grating; a photodetector (5) disposed opposing the predetermined side of the primary grating; a second reference grating (fig. 4, 34b) disposed between the photodetector and the primary grating; wherein the primary grating, the first reference grating and the light source are configured for movement relative to one another and the elements as set forth above are configured as an optical position encoder device. Huber further discloses (fig. 1) the first and second reference grating are configured for identical relative motion with respect to the

Art Unit: 2878

primary grating. Huber further discloses that the light source can be either a laser or an LED (column 5, lines 13-15, column 2, lines 37-40). Huber also discloses that a period of the first reference grating ( $T_r$ ), a period of the second reference grating ( $T$ ) are related to a period of the primary grating ( $T_s$ ) by the formula:  $1/T + 1/T_r = 1/T_s$  (column 2, lines 41-56 in view of Fig. 4 in which grating appear to have the same period).

Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Aoki (US 6791699).

In regard to claims 1 and 2, Aoki discloses (fig. 1) a primary grating (1); a light source (4) disposed opposing a predetermined side of the primary reflective grating; a first reference grating (PDA1) disposed between the light source and the primary grating; a photodetector (3) disposed opposing the predetermined side of the primary grating; a second reference grating (PDA2) disposed between the photodetector and the primary grating; wherein the primary grating, the first reference grating and the light source are configured for movement relative to one another (abstract). Aoki further discloses (fig. 1) that the reference gratings are stationary and the primary grating is movable.

Claims 10 is rejected under 35 U.S.C. 102(b) as being anticipated by Speckbacher et al. (US 6486467).

In regard to claim 10, Speckbacher discloses (fig. 1) a moving grating (10) with a period  $T_s$ ; a photodetector (2.1) with light sensitive components, a light

Art Unit: 2878

source (1.1) disposed on the photodetector; a first fixed grating (8.1) with spatial period  $T_r$  disposed on the light source; and at least one second fixed grating (8.3) with period  $T$  disposed on the light sensitive components;

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huber et al. (5424833).

In regard to claims 10-12, Huber discloses (fig. 1) a moving grating (4) with period  $T_s$ ; a photodetector (5) with light sensitive components; a light source (2); a first and second fixed grating (fig. 4, 34a,b) with respective periods  $T$  and  $T_r$  disposed on the photodetector; wherein the moving grating is moveable relative to the first fixed grating and the light source. Huber fails to disclose the light source or the fixed grating being disposed on the photodetector. However, it is of routine skill in the art to integrate parts. It would have been obvious to one of ordinary skill in the art at the time the invention was made to dispose the light source and the fixed gratings on the photodetector to make the invention more compact. Huber discloses the light source being an incoherent light source (column 2, lines 37-40). Huber also discloses that a period of the first reference grating ( $T_r$ ), a period of the second reference grating ( $T$ ) are related to a period of

Art Unit: 2878

the primary grating (Ts) by the formula:  $1/T + 1/T_r = 1/T_s$  (column 2, lines 41-56 in view of Fig. 4 in which grating appear to have the same period).

Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Speckbacher et al. (US 6486467) in view of Ieki et al. (5068530).

In regard to claims 13 and 14, Speckbacher discloses an optical position encoder as set forth above. Speckbacher discloses (fig. 1) a plurality of second gratings (8.2 and 8.3) with a fixed phase relationship; wherein the moving grating is moveable relative to the first fixed grating and light source. Speckbacher further discloses (fig. 1) that the gratings are sinusoidal. Speckbacher remains silent regarding the gratings functioning to emit only one harmonic component. However, Ieki discloses (fig. 1) using multiple gratings in order to emit just one harmonic component (abstract). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the harmonic elimination taught by Ieki to the invention of Speckbacher in order to transmit a more precise signal.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Huber et al. (5424833) in view of Halzapfel et al. (6175414).

In regard to claim 15, Huber discloses (fig. 1) an optical device as set forth in claim 1. Huber fails to disclose a photodetector disposed on a far side of the primary grating. However Halzapfel teaches (fig. 1a and 1b) that using

Art Unit: 2878

routine skill in the art. It would have been obvious to one of ordinary skill in the art at the time the invention was made to place the photodetector on the far side of the grating in order to make the device more compact or take a needed shape or configuration.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian J. Livedalen whose telephone number is (571) 272-2715. The examiner can normally be reached on 8:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Porta can be reached on (571) 272-2444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Art Unit: 2878

bjl

A handwritten signature in black ink, appearing to read 'D. Porta', with a long horizontal stroke extending to the right.

**DAVID PORTA**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 2800**